



FHX-1200

Twelve-Port Stackable
Fast Ethernet Hub

User's Guide

Contents

Section 1 - Introduction	1
Section 2 - Installation	1
Section 3 - LED indicators	3
Section 4 - Troubleshooting	4
Section 5 - Specifications	4
Section 6 - 100 Base-TX Cable Requirements	4
Section 7 - Technical Support	5
Appendix A - Optional 100Base-FX module	6
Appendix B - FCC Notice	7
Appendix C - CE Mark Declaration of Conformance	7
Appendix D - Two Year Limited Warranty	7

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Section 1 - Introduction

The MaxTech FHX-1200 is a 12-port hub compliant with the IEEE 802.3u 100Base-TX fast ethernet standard. The twelve RJ-45 ports connect workstations or other devices together on a 100Base-TX fast ethernet network using twisted-pair cable. An additional crossover port connects this hub to a second hub using a standard (straight-through) network cable for easy network expansion. The hub also provides a stackable port for cascading up to 6 hubs (72 nodes). A full set of LED indicators assist in network troubleshooting.

The package contains the following items:

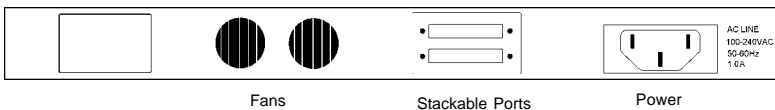
- Hub
- Power cord
- User's Guide
- Stacking cable
- Rack mount kit

Section 2 - Installation

2.1 Connecting Workstations to hub

1. **Locating the Hub** - Place the hub in a location central to your networked computers, or within the maximum cable length (328 ft.) to the farthest computer. The hub may be placed on a table or mounted in a 19-inch rack with the included mounting kit.
2. **Connecting the Power Cord** - Insert the power cord into the hub's **power** connector (See Figure 1). Plug the other end of the power cord into an AC power outlet. The hub is powered on when this connection is made. The power switch has been eliminated to reduce the chance that the hub will be accidentally turned off.

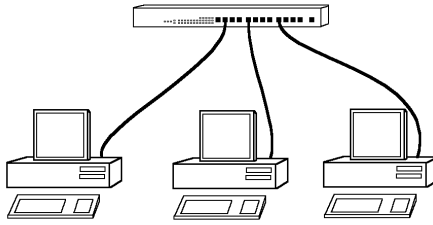
Figure 1 Hub connections



3. **Connecting Workstations** - Connect one end of a Category 5 twisted-pair cable into an open port (1 through 12, except the Daisy-Chain port) on the hub (See Figure 2). Connect the other end of the cable to the computer to be networked. The length of the cable must be less than 328 feet (100 meters).

The hub installation is complete. If you have more than one hub and need to daisy-chain or stack the hubs, proceed to Section 2.2. Otherwise, proceed to Section 3.

Figure 2 Connecting a workstation



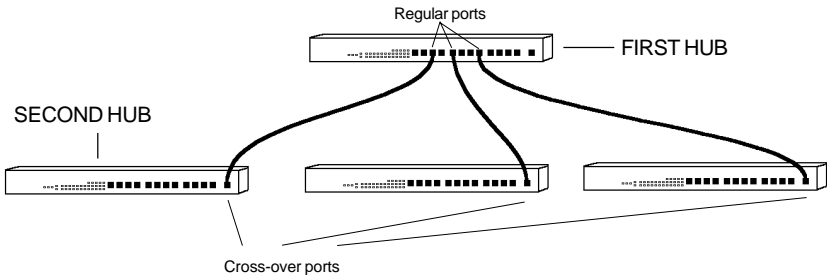
2.2 Connecting Hub to Hub

The network can be expanded beyond twelve workstations by connecting two or more hubs together. There are two methods for expansion: daisy-chaining two hubs using a twisted pair cable, or stacking up to six hubs using the hub's stacking connector.

2.2.1 Daisy-chaining hubs

The hub's twelfth port features an additional cross-over connection to facilitate daisy-chaining hubs using standard cable. Plug one end of a standard straight-through cable (20 feet or less) into a regular port (1 through 12) of the first hub, and the other end into the daisy-chain port of a second hub. The maximum number of hubs between any two nodes (workstations) is two, therefore, to daisy-chain more than two hubs, link several hubs to one central hub (refer to Figure 3).

Figure 3 Daisy-chaining hubs



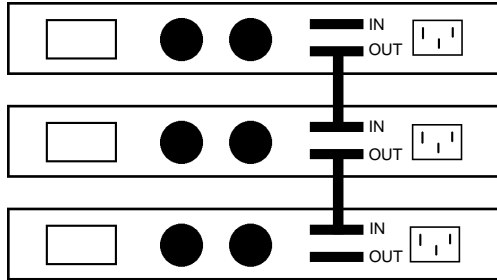
Note: The Daisy-Chain port **is** port number 12 with a reversed pin-out. The daisy-chain port and port 12 cannot be used simultaneously.

2.2.2 Stacking hubs

Up to six hubs may be stacked using the stacking connectors on the back of the hub.

Connect the supplied stacking cable to the OUT port of the first hub and connect the cable to the IN port of the second hub (refer to Figure 4). *Do not connect an OUT port to an OUT port or an IN port to an IN port.*

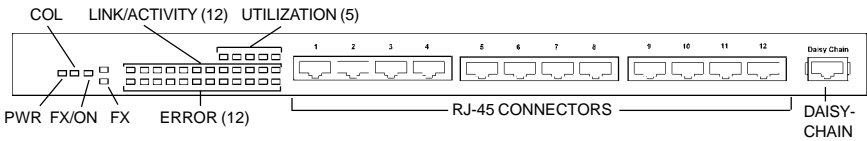
Figure 4 Stacking hubs



Section 3 - LED indicators

The front-panel LEDs (see Figure 5) show the status of the hub and the network connections.

Figure 5 Hub LEDs



LED		Function
POWER	On	Hub is powered on
	Off	Hub is powered off
COLLISION	Amber	Data Collision has occurred
FX/ON	Green	100 Base-FX module is installed and ON
UTILIZATION	Green	Indicates bandwidth being used
PARTITION (1 - 12, FX)	Off	Port is operating normally
	Flash	Data error has occurred
	On	The port has been disconnected from the network due to excessive collisions caused by the attached computer
LINK/ACTIVITY (1 - 12, FX)	On	A network link is established
	Blink	Data is being transmitted

Section 4 - Troubleshooting

Symptom: *Partition indicator lights up.*

Causes: Hub has partitioned the 100BASE-TX (RJ-45) port due to excessive collisions.

Solution: If port partitioning has occurred, the hub will automatically enable the port when the faulty condition disappears.

Symptom: *Link/Traffic indicator remains unlit.*

Causes: The workstation's network adapter, cable or the hub port is defective.

Solution: The most common cause is a defective network adapter or cable connection. Check the corresponding cable connections, or the workstation's network adapter for possible defects. Verify that the correct cable type (straight-through category 5) is being used (see Section 6). Replace the defective cable or adapter.

Symptom: *Port 12 and Daisy-Chain port do not work simultaneously.*

Causes: Both ports are physically the same port.

Solution: Use either Port 12 or the Daisy-chain port.

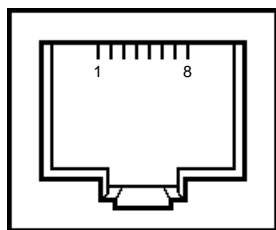
Section 5 - Specifications

Network Standard:	IEEE 802.3u Ethernet 100Base-TX Class I and Class II Repeater
Transfer rate:	100 Mbps
Topology:	Tree/Star
Access Method:	CSMA/CD, 100 Mbps
Media:	Category 5, 2 pair, UTP or STP
Max. cable length:	328 ft. (100 meters)
Ports:	12 RJ-45 jacks
Crossover connector:	1 RJ-45 (port 12)
Stackable connector:	SCSI II Cable connection
100Base-FX connector:	SC connector (62.5/125)
Auto-partition:	Yes
Expandability:	72 ports (Class I)
Dimensions:	17.25" x 10.1" x 1.78"
Certification:	FCC Part 15 Class A
Temperature:	0° C to 55° C (operating)
Humidity:	5% to 95% (operating, non-condensing)
Power:	100-240VAC, 55 W max., 50/60 Hz

Section 6 - 100 Base-TX Cable Requirements

100Base-TX networks use unshielded or shielded twisted-pair cable and 8-pin RJ-45 modular connectors. Use 22-26 AWG, 2- or 4-pair, 100 ohm/ft, solid conductor Category 5 cable. Maximum cable length from hub to workstation is 328' (100 m).

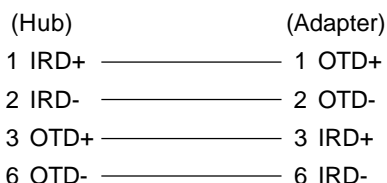
Figure 6 Hub's RJ-45 Pin Assignments



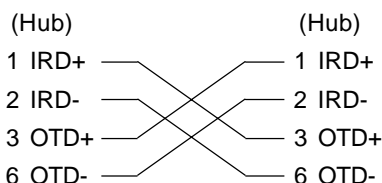
Pin	Assignment (MDI-X Port 1 - 8)	Assignment (MDI Daisy-Chain Port)
1	Input Receive Data +	Output Transmit Data +
2	Input Receive Data -	Output Transmit Data -
3	Output Transmit Data +	Input Receive Data +
6	Output Transmit Data -	Input Receive Data -
4,5,7,8	Not Used	Not Used

Schematics for both straight and crossover twisted-pair cable are shown below.

Straight-Through



Crossover



Note: A crossover cable is only necessary if you are connecting two hubs which do not have a daisy-chain port available.

Section 7 - Technical Support

In the unlikely event you experience difficulty in the use of the product, or if it does not operate as described, we suggest you: (1) consult the Troubleshooting section of this guide and (2) consult with your dealer.

If you still cannot resolve the problem, call the MaxTech Service Center at (310) 921-4438 between 9:00 a.m. and 6:00 p.m. (PST Monday through Friday). **If the nature of your question is related to the network operating system that you are using, refer to its manual.** Calling the Service Center without complete and accurate information concerning the **nature of the problem** will be both time-consuming and frustrating for you.

You may also reach us through:

24 hour BBS - (310) 921-7180
CompuServe ID - 71333,44
Prodigy - *Jump:* Manufacturers BB
Email - support@maxcorp.com

24 hour Faxback - (310) 921-9540
America Online - *Keyword:* Maxtech
World Wide Web - www.maxcorp.com
FTP - ftp.maxcorp.com

Appendix A - Optional 100Base-FX module

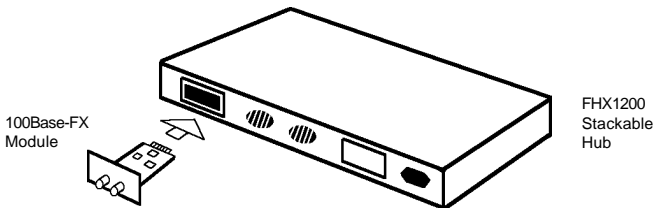
The 100Base-FX module is an optional module which enables connectivity (as the thirteenth port) using multi-mode duplex 62.5/125 fiber-optic cable. Fiber-optic cable provides better immunity to electromagnetic interference and supports longer cable lengths compared to copper wire. The 100Base-FX module may be used to connect the hub to either a 100Base-FX workstation or another 100Base-FX hub. The maximum cable length for a workstation connection is 1350 feet (412 meters). The maximum cable length for a hub connection is 688 feet (210 meters).

Installing the 100Base-FX module

The 100Base-FX module is an option to allow the FHX1200 Stackable hub to support fiber-optic cable. Follow the directions below to install the 100Base-FX module.

1. Disconnect the hub from the electrical outlet.
2. Place the hub on a flat and steady surface.
3. Remove the 4 bracket screws from the 100Base-FX port of the stackable hub and remove the mounting bracket (See Figure 7).

Figure 7 Installing the 100Base-FX module



4. Carefully insert the 100Base-FX module into the 100Base-FX port of the hub.
5. Use the screws removed in step 3 to fasten the 100Base-FX module into place.

Connecting cables to the 100Base-FX port

1. Connect one end of a fiber-optic cable into the TX connector of the first hub. Connect the other end of this cable into the RX connector of the second hub.
2. Connect one end of a second fiber-optic cable into the RX connector of the first hub. Connect the other end of this cable into the TX connector of the second hub.

Do not connect fiber-optic cables from TX to TX or RX to RX on different hubs.

Appendix B - FCC Notice

FCC Compliance Statement

This product has been tested and found to comply with the limits for a Class B computing device pursuant to Part 15 of the FCC rules. Installed correctly, it probably will not interfere with radio or TV reception. However, we do not guarantee the absence of interference.

This product generates and uses energy of about the same frequency as radio and TV broadcasts. Installed incorrectly, it may interfere with reception of radio and TV broadcasts.

NOTE

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION

If the device is changed or modified without permission from MaxTech, the user may void his or her authority to operate the equipment.

Appendix C - CE Mark Declaration of Conformance

This is to certify that this product complies with ISO/IEC Guide 22 and EN45014. It conforms to the following specifications:

EMC:	EN55022(1988)/CISPR 22(1985)	Class B
	EN60555-2(1987)	Class A
	prEN55024-2(1990)/IE801-2(1991)	4KV CD, 8KV AD
	prEN55024-3(1991)/IE801-3(1984)	3V V/m
	PrEN55024-4(1992)/IE801-4(1988)	1KV - (power line)
		0.5KV - (signal line)

This product complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC.

Appendix D - Two Year Limited Warranty

MaxTech warrants to the original buyer of this product against defects in material and workmanship for two years from the date of purchase. During the warranty period, MaxTech will repair (or at its option, replace) the product that proves to be defective, provided the product has not been abused, misused, modified, or repaired by an unauthorized center.

In the event the product requires service, follow the procedure outlined in **Technical Support**. When you are instructed by the Technical Support Representative to return the product to MaxTech for repair, you will be given an RMA (Return Merchandise Authorization) number. You **must have an RMA Number to return the**

product for service. Use the following procedure to return the product to MaxTech:

1. Return the product in its original package and packing (if possible), and put it in a sturdy corrugated box.
2. Be sure to include your name, address, day-time telephone number, RMA number, and a brief description of the problem (also enclose a check for out-of-warranty repair). Enclose your check or Postal Money Order for \$7.50 to cover the cost of return shipping/handling. Please do not send cash or stamps.
4. After wrapping the package securely for shipping, print your name, return address and the RMA # **clearly** on the outside of your package.
5. Ship the unit prepaid via UPS or the U.S. Postal Service to the address provided by the technician when you call. We recommend that the unit be insured.

This warranty is valid for products sold in North America only. Contact your local authorized distributor or dealer for the warranty offered in other areas.

All warranty services must be performed by Authorized Service Centers. There are no user serviceable parts inside the unit. Do not remove any components or attempt to service the unit by any unauthorized service center. This warranty is voided if the product has been abused, misused, modified, or repaired by an unauthorized service center.

First Edition

GZ/DR - Version 1.0